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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary

Application No.

10/521,365

Applicant(s)

ZAGHIB ET AL.

Examiner

Edu E. Enin-Okut

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-76 is/are pending in the application.
- 4a) Of the above claim(s) 13,21,50-61 and 70-76 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14-20, 22-49 and 62-69 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on (not available) is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/12/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

**PARTICLES CONTAINING A NON-CONDUCTING OR SEMI-CONDUCTING NUCLEUS
COVERED WITH A HYBRID CONDUCTING LAYER, THEIR PROCESSES OF
PREPARATION AND USES IN ELECTROCHEMICAL DEVICES**

Election/Restrictions

1. Applicant's election of Group I (claims 1-49 and 62-29) in the reply filed on November 14, 2008 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Thus, claims 50-61 and 70-76 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions, there being no allowable generic or linking claim.

2. Applicant's election with traverse of Species A1 and B2 (claims 14 and 22-34) in its reply is acknowledged. The traversal is on the ground(s) that applicant refuses to make an election that does not include the limitations are recited in claim 5 because it contests that its inventions "... has three main choices for nucleus material, as evidenced by claims 5, 13 and 14 ..." (see p. 12 of Applicant's remarks). However, Applicants arguments are not persuasive because one of ordinary skill in the art would appreciate that a nucleus of any of the materials recited in claim 5 may include any of the constituents recited in claims 13 or 14; and, can be either conducting or non-conducting dependant upon its overall composition.

The requirement is still deemed proper and is therefore made FINAL.

Thus, claims 13 and 21 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions, there being no allowable generic or linking claim.

3. Applicant's election with traverse of A1(c), and lack of an election between Species B2(a) and B2(b), in its reply is acknowledged. The traversal is on the ground(s) that applicant refuses to make an election that does not include the limitations are recited in claim 5 and the election of Species B2 requires

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two different conducting forms of carbon. This requirement (i.e., an election among Species A1(a)-A1(c); A2(a), A2(b), A3(c); and B2(a)-B2(b) as presented on p. 3-4 of the requirement of restriction / election issued on September 17, 2008) is withdrawn because Applicant's arguments were found persuasive.

4. Claims 1-12, 14-20, 22-49 and 62-69 are now pending.

Priority

5. Acknowledgment is made of Applicant's claim for foreign priority to Canadian Patent Application No. 2394056, filed on July 12, 2002, under 35 U.S.C. 119(a)-(d). A certified copy of that application has been received.

Claim Objections

6. Claims 42 and 67 objected to because of the following informalities: Claims 42 and 67 recite "... HEBM ...". It appears this should be "... High Energy Ball Milling (HEMB) ...". Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 16, 20 and 44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Regarding claim 16, the claim recites the limitation "... according to claim 9, in which Z represents ...". There is insufficient antecedent basis for this limitation in the claim.

Regarding claim 20, the claim recites the limitation "... the coating consists of a hybrid mixture of carbon, and/or a carbon-metal hybrid mixture ...". The use of the term "and/or" makes the composition of the coating unclear. (*Examiner's Note*: For purposes of examination, it is assumed that the above-described recitation is "... hybrid mixture of carbon or a carbon-metal hybrid mixture ...".)

Regarding claim 44, the claim recites the limitation "... the step of synthesizing particles of $\text{Li}_4\text{Ti}_5\text{O}_{12}$...". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1-3, 5-8, 14, 20, 22, 23, 32, 33, 35, 38-43, 45, 46, 64 and 66-69 are rejected under 35 U.S.C. 102(e) as being anticipated by Kaneda et al. (US 6,638,662) as evidenced by Blau (US 2,701,208) and Utsumi et al. (US 4,536,435).

Regarding claims 1-3, 20, 22, 23 and 25, Kaneda discloses a lithium secondary battery with a negative electrode-active material (a mixture of particles) composed of particles of metal and metal oxide (a nucleus) embedded in particles, or aggregates, of carbonaceous material formed of crystalline and amorphous graphite (Carbon 2 and Carbon 1, respectively, forming a hybrid conductor coating providing a network of electrical conductivity through hybrid conducting chains) (Abstract; 3:24-28, 4:1-4, 4:58-5:14).

As to the particles being at least partially connected through hybrid conducting chains which provide a network of electrical conductivity, one would appreciate that the carbonaceous material particles of Kaneda, or aggregates, with metal and metal oxide particles *embedded* therein [emphasis added], provide a network of conductivity via a conductor chain formed from a carbonaceous material particle to its adjacent carbonaceous material particle and so on.

Regarding claims 5-7 and 64, Kaneda discloses that its metal or metal oxide particles (nuclei) include at least one metal selected from Si, Sn, Ge, Al, Zn, Bi, Mg, Pb, Sb, B, In, Ga, Tl, P, As, Pd and Pt; and, the oxide has a composition represented by a composition of AB_xO_y (A: one element selected from Si, Sn, Ge, Al, Zn, Bi and Mg; B: at least one element selected from Si, Sn, Ge, Al, Zn, Bi, Mg, P, B, Ca, K, Na, Li and F; $x=0$ to 1.5, preferably 0 to 1.0; $y=1.0$ to 5.5, preferably 1.0 to 4.0) and is crystalline or amorphous (3:65-67, 4:38-44).

Regarding claim 8, the limitations recited in this claim have been addressed above with respect to claims 1, 7 and 64.

Regarding claim 14, Kaneda discloses that its metal or metal oxide particles (nuclei) can include oxides such as SiO, SnO, GeO, SiSnO₃, GeSNO₃, SiGe_{0.5}O_{1.5}, SiPO_{0.2}B_{0.2}O₂, GeSi_{0.1}O_{2.2}, GePO_{0.5}O_{3.25}, GeBO_{2.5}, SnSi_{0.7}Al_{0.1}B_{0.1}O_{2.95}, SnSi_{0.8}Mg_{0.2}O_{2.8}, etc., but is not limited thereto (4:51-56). One would appreciate that, at the least, GeO and SiO are constituents of amorphous, or glassy, compositions (see Blau, 1:79-2:26 and Utsumi, Abstract).

Regarding claim 32, Kaneda discloses that the graphite (Carbon 2) used in its composite powder (a mixture of particles) includes powders of natural graphite and artificial graphite (9:46-47).

Regarding claim 33, Kaneda discloses that its graphite particles (hybrid carbon mixture) can include at least 95%, preferably at least 37%, by weight of crystalline graphite and not more than 5%, or preferably not more than 3%, by weight of amorphous graphite (4:1-4).

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Regarding claim 35, Kaneda discloses that metal or metal oxide particles (nuclei) have an average particle size of not more than 5 μm , preferably 0.2 to 2.5 μm , and a mean particle size of not more than 10 μm (3:48-51, 4:14-15).

Regarding claims 38-40 and 66, although Kaneda does not expressly disclose the properties of the mixture of particles as recited in these claims, it is the position of the examiner that such properties are inherent, given that both Kaneda and the instant invention have similar structures and composition. A reference which is silent about a claimed invention features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. *In re Robertson*, 49 USPQ 1949 (1999). See MPEP 2112.

Regarding claims 41-43 and 67-69, Kaneda discloses a process for preparing a composite powder (a mixture of particles) by repeating the mechanical pulverization and pressure welding of oxide particles (nuclei) and carbonaceous particles in a ball mill or with use of jet mill; or, by mixing oxide particles with a carbon precursor, followed by carbonization or a repetition of mechanical pulverization and pressure welding; and, followed by heating, if required (9:49-51, 4:18-33). One would appreciate the process of Kaneda described above, with heating *as an option* [emphasis added], can be carried out at room temperature (i.e., about 20-25 °C) which is significantly below 300 °C.

Regarding claims 45 and 46, Kaneda discloses that carbon precursors include non-graphitizable precursors such as polyacrylonitrile, phenol resin, furan resin, etc. (6:39-43).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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12. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. Claims 4, 15, 18, 24, 26-31, 34, 36, 37, 62, 63 and 65 rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneda et al. as applied to claims 1-3, 5-8, 14, 20, 22, 23, 25, 32, 33, 35, 38-43, 45, 46, 64 and 66-69 above.

Kaneda is applied and incorporated herein for the reasons above.

Regarding claims 4, 62 and 63, Kaneda does not expressly teach that 50 to 90%, or 80%, of a first conducting material at least partially covering the surface of said nuclei; and 10 to 50%, or 20%, of a second conducting material in which particles are connected together to constitute an electrical conductivity network.

However, since Kaneda teaches that its carbon particles form a hybrid conductor coating providing a electrically conductive network via hybrid conducting chains (see the rejection of claim 1 above), it would have been obvious to one having ordinary skill in the art at the time the invention was made to arrange the carbon particles of Kaneda as recited in claim 4, since it has been held that rearranging parts of an invention involves only routine skill in the art (e.g., *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950)). See MPEP 2144.04 (VI).

Further, as to the percentages as recited in claims 62 and 63, Kaneda teaches that its graphite particles (hybrid carbon mixture) can include at least 95%, preferably at least 37%, by weight of crystalline graphite and not more than 5%, or preferably not more than 3%, as discussed above with respect to claim 33. It has been held that obviousness exists where the claimed ranges overlap or lie

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inside ranges disclosed by the prior art (e.g., *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)). See MPEP 2144.05 (I).

Regarding claim 15 and 37, Kaneda does not expressly teach that the particles have a D_{50} of 7 micrometers; or, that the average size of the particles is between 4 to 30 micrometers.

However, Kaneda does teach that its composite powder has particle sizes of not more than 50 μm for at least 90% by weight thereof (3:57-57). It has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art. See MPEP 2144.05 (I).

Regarding claims 18 and 19, Kaneda teaches that its composite powder is composed of at least 50%, preferably 80%, by weight of oxide particles embedded in a carbonaceous material (3:39-46, 4:18-27). Thus, one would appreciate that the composite powder contains less than 50%, or preferably less than 20%, by weight of carbon. It has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art. See MPEP 2144.05 (I).

Regarding claims 24 and 26, Kaneda discloses that its carbonaceous material (Carbon 1 and Carbon 2) has a (002) interplanar spacing of 0.3350 nm to 0.3650 nm (i.e., 3.350 to 3.65 Angstroms) by x-ray diffraction (4:10-12). It has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art. See MPEP 2144.05 (I).

Regarding claim 27, the limitations recited in this claim has been addressed above with respect to claim 32.

Regarding claims 28 and 30, Kaneda teaches that its carbon particles have a specific surface area of 1 to 300 m^2/g (7:18-21). It has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art. See MPEP 2144.05 (I).

Regarding claims 29 and 31, Kaneda teaches that particles of graphite, amorphous carbon, and a carbon mixture thereof, have an average particle size of preferably not more than 30 μm and carbon short fibers, also suitable for use of in its composite powder, having diameters from 0.1 to 10 μm (7:18-22). It

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has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art. See MPEP 2144.05 (I).

Regarding claim 34, Kaneda teaches that its graphite particles (hybrid carbon mixture) can include at least 95%, preferably at least 37%, by weight of crystalline graphite and not more than 5%, or preferably not more than 3% (4:1-4). It has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art. See MPEP 2144.05 (I). Further, it has been held that, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (e.g., *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)). See MPEP 2144.05 (II).

Regarding claim 36, the limitations recited in this claim have been addressed above with respect to claim 36 (see Kaneda, 3:48-51, 4:14-15). Further, it has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art. See MPEP 2144.05 (I).

Regarding claim 65, it has been held that either anticipation or obviousness exists where applicant claims a composition in terms of a function, property or characteristic, and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference (e.g., *In re Best*, 562 F.2d 1252, 1255 n.4, 195 USPQ 430, 433 n.4 (CCPA 1977)). See MPEP 2112 (III).

14. Claims 9-12 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneda et al. as applied to claims 1-8, 14, 15, 18-20, 22-43, 45, 46 and 62-69 above, and further in view of Koshiba et al. (US 5,545,468).

Kaneda is applied and incorporated herein for the reasons above.

Regarding claims 9 and 10, Kaneda does not expressly teach that the nucleus consists of a lithium spinel structure; or, the lithium oxide is selected from the group consisting of oxides of the formula: $\text{Li}_4\text{Ti}_5\text{O}_{12}$, $\text{Li}_{(4-\alpha)}\text{Z}_\alpha\text{Ti}_5\text{O}_{12}$ (in which α is higher than 0 and lower than or equal to 0.33, Z represents a

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source of at least one metal), and $\text{Li}_4\text{Z}_\beta\text{Ti}_{(5-\beta)}\text{O}_2$ (in which β is higher than 0 and/or lower than or equal to 0.5, Z represents a source of at least one metal).

Koshiba teaches a lithium cell with an anode formed of a lithium titanate having a spinel structure represented by the general formula $\text{Li}_x\text{Ti}_y\text{O}_4$ wherein $0.8 \leq x \leq 1.4$ and $1.6 \leq y \leq 2.2$ including, for example, $\text{Li}_{4/3}\text{Ti}_{5/3}\text{O}_4$ (i.e., $\text{Li}_4\text{Ti}_5\text{O}_{12}$) (Abstract; 2:59). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a lithium oxide having a spinel structure, such as a $\text{Li}_4\text{Ti}_5\text{O}_{12}$, in as nuclei in the mixture of particles of Kaneda because Koshiba teaches that its use in an electrode incorporating the mixture of particles prevents the formation of dendrites during the charge and discharge cycles and facilitates stable charge and discharge characteristics (see Koshiba, 4:36-42).

Regarding claims 11, 12 and 17, Kaneda, as modified by Koshiba, teaches that its mixture of particles has nuclei completely composed of a lithium oxide such as $\text{Li}_4\text{Ti}_5\text{O}_{12}$ (see the rejections of claims 1 and 10 discussed above).

15. Claims 44 and 47-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneda et al. as applied to claims 41-43, 45 and 46 above, and further in view of Koshiba et al. and Ravet et al. (US 6,855,273).

Kaneda is applied and incorporated herein for the reasons above.

Regarding claim 44, Kaneda does not expressly teach that its process includes nuclei based on $\text{Li}_4\text{Ti}_5\text{O}_4$; or, that the step of synthesizing particles of $\text{Li}_4\text{Ti}_5\text{O}_4$ after mixing its carbon particles.

As to nuclei based on $\text{Li}_4\text{Ti}_5\text{O}_4$, Koshiba, discussed above, teaches a lithium cell with an anode formed of a lithium titanate having a spinel structure represented by the general formula $\text{Li}_x\text{Ti}_y\text{O}_4$ wherein $0.8 \leq x \leq 1.4$ and $1.6 \leq y \leq 2.2$ including, for example, $\text{Li}_{4/3}\text{Ti}_{5/3}\text{O}_4$ (i.e., $\text{Li}_4\text{Ti}_5\text{O}_{12}$) (Abstract; 2:59). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a lithium oxide having a spinel structure, such as a $\text{Li}_4\text{Ti}_5\text{O}_{12}$, as nuclei in the mixture of particles of Kaneda because Koshiba teaches that its use in an electrode incorporating the mixture of particles prevents the formation

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of dendrites during the charge and discharge cycles and facilitates stable charge and discharge characteristics (see Koshiba, 4:36-42).

As to the step of synthesizing particles of $\text{Li}_4\text{Ti}_5\text{O}_4$ after mixing its carbon particles, Ravet teaches the preparation of complex oxide electrode material with a carbonaceous material coating by depositing the carbonaceous material simultaneously with the formation of the complex oxide (3:52-55, 6:17-29). It would have been obvious to one of ordinary skill in the art at the time of the invention to prepare the mixture of particles of Kaneda in the manner taught by Ravet because it simplifies the process of Kaneda by limiting the number of breaks in the processing chain

Further, as to the order of the steps of the process of Kaneda, as modified by Koshiba and Ravet, In general, the transposition of process steps or the splitting of one step into two, where the processes are substantially identical or equivalent in terms of function, manner and result, was held not to patentably distinguish the process (e.g., *Ex parte Rubin*, 128 USPQ 440 (Bd. Pat. App. 1959). See MPEP 2144.04 (IV)(C).

Regarding claims 47 and 48, Kaneda does not expressly teach the polymer is selected from the group consisting of sugars, chemically modified sugars, starches, chemically modified starches, gelatinized starches, chemically modified starches, chemically modified and gelatinized starches, cellulose, chemically modified cellulose and mixtures thereof; or, that the polymer is a cellulose acetate.

Ravet teaches that complex oxide electrode materials with a coating of a conductive carbonaceous material may be prepared by, for example, adding cellulose acetate to a phosphate as a precursor of an amorphous carbon coating (Abstract; 11:29-35). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a cellulose acetate in the process of Kaneda because Ravet teaches that the polymer is known to decompose with high carbonization yields (see Ravet, 11:30-32).

Regarding claim 49, the limitations recited in this claim have been addressed above with respect to claims 41 and 44. Further, In general, the transposition of process steps or the splitting of one step into

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two, where the processes are substantially identical or equivalent in terms of function, manner and result, was held not to patentably distinguish the process (e.g., *Ex parte Rubin*, 128 USPQ 440 (Bd. Pat. App. 1959). See MPEP 2144.04 (IV)(C).

Correspondence / Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Edu E. Enin-Okut** whose telephone number is **571-270-3075**. The examiner can normally be reached on Monday - Thursday, 7 a.m. - 3 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Edu E. Enin-Okut/
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795